

08.5. SIGNS OF ADVERSITY - A NOVEL MACHINE LEARNING APPROACH TO CHILDHOOD TRAUMA, BRAIN STRUCTURE AND CLINICAL PROFILES

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Background: Childhood maltreatment (CM) is a major psychiatric risk factor and leads to long-lasting physical and mental health implications throughout the affected individual's lifespan. Nonetheless, the neuroanatomical correlates of CM and their specific clinical impact remain elusive. This might be attributed to the complex, multidimensional nature of CM as well as to the restrictions of traditional analysis pipelines using nosological grouping, univariate analysis and region-of-interest approaches. To overcome these issues, we present a novel transdiagnostic and naturalistic machine learning approach towards a better and more comprehensive understanding of the clinical and neuroanatomical complexity of CM.

Methods: We acquired our dataset from the multi-center European PRONIA cohort (www.pronia.eu). Specifically, we selected 649 male and female individuals, comprising young, minimally medicated patients with clinical high-risk states for psychosis as well as recent-onset of depression or psychosis and healthy volunteers. As part of our analysis approach, we created a new Matlab Toolbox, which performs multivariate Sparse Partial Least Squares Analysis in a robust machine learning framework. We employed this algorithm to detect multi-layered associations between combinations of items from the Childhood Trauma Questionnaire (CTQ) and grey matter volume (GMV) and assessed their generalizability via nested cross-validation. The clinical relevance of these CM signatures was assessed by correlating them to a wide range of clinical measurements, including current functioning (GAF, GF), depressivity (BDI), quality of life (WHOQOL-BREF) and personality traits (NEO-FFI).

Results: Overall, we detected three distinct signatures of sexual, physical and emotional maltreatment. The first signature consisted of an age-dependent sexual abuse pattern and a corresponding GMV pattern along the prefronto-thalamo-cerebellar axis. The second signature yielded a sex-dependent physical and sexual abuse pattern with a corresponding GMV pattern in parietal, occipital and subcortical regions. The third signature was a global emotional trauma signature, independent of age or sex, and projected to a brain structural pattern in sensory and limbic brain regions. Regarding the clinical impact of these signatures, the emotional trauma signature was most strongly associated with massively impaired state- and trait-level characteristics. Both on a phenomenological and on a brain structural level, the emotional trauma pattern was significantly correlated with lower levels of functioning, higher depression scores, decreased quality of life and maladaptive personality traits.

Discussion: Our findings deliver multimodal, data-driven evidence for a differential impact of sexual, physical and emotional trauma on brain structure and clinical state- and trait-level phenotypes. They also highlight the

multidimensional nature of CM, which consists of multiple layers of highly complex trauma-brain patterns. In broader terms, our study emphasizes the potential of machine learning approaches in generating novel insights into long-standing psychiatric topics.

08.6. RISK OF HOMELESSNESS AFTER DISCHARGE FROM PSYCHIATRIC WARDS

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Background: Homelessness is an increasing societal problem in most high-income countries and often linked to mental illness and substance use disorders.

However, there are few high-quality studies examining the risk of homelessness following discharge from in-patient psychiatric treatment. Such information might be used as documentation for the need of structural changes to prevent homelessness in people with severe mental illness.

We aimed to analyse the absolute and relative risk of homelessness following discharge from psychiatric wards in Denmark in the period from 2001 to 2015 and to identify high-risk diagnostic groups.

Methods: We did a nationwide, register-based cohort study including people aged 18+ years discharged from psychiatric wards in Denmark between 1 January 2001 and 31 December 2015. We analysed associations between psychiatric diagnoses and the risk of homelessness using survival analysis.

Results: A total of 126,848 psychiatric in-patients were included accounting for 94,835 person-years. The incidence of homelessness one year following discharge was 28.18 (95% CI 26.69–29.75) and 9.27 (95% CI 8.45–10.16) per 1000 person-years at risk in men and women, respectively. The one-year cumulative probability of first homelessness after discharge from psychiatric wards with a schizophrenia disorder was 1.54% (95% CI 1.25–1.88) in males and 0.60% (95% CI 0.40–0.87) in females.

Substance use disorders increased the risk of homelessness after discharge with adjusted incidence rate ratios of 6.60 (95% CI 5.19–8.40) (men) and 13.06 (95% CI 9.31–18.33) (women), compared with depressive disorders. Schizophrenia increased the risk of homelessness after discharge by 1.91 (95% CI 1.29–2.83) and by 2.53 (95% CI 1.41–4.54) in men and women, respectively, also compared with depressive disorders. Prior history of homelessness was an important predictor for homelessness following discharge.

Discussion: The first year following discharge from psychiatric wards is a high-risk period of homelessness, especially when having a substance use disorder or a prior history of homeless shelter contact. Schizophrenia was also an important predictor of homelessness. Improved efforts to prevent homelessness are needed.

09. Oral Session: Substance Use/ Treatment

09.1. SATISFACTION WITH USING A NOVEL FINGERSTICK FOR ABSOLUTE NEUTROPHIL COUNT (ANC) AT THE POINT OF TREATMENT IN PATIENTS TREATED WITH CLOZAPINE

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